



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DRAFT PERMIT

TO WITHDRAW GROUNDWATER IN THE
EASTERN VIRGINIA GROUNDWATER MANAGEMENT AREA

Permit Number: GW0042302

Effective Date: XXXXXXXX XX, XX23

Expiration Date: XXXXXXXX XX, XX38

Pursuant to the Ground Water Management Act of 1992 (Section 62.1-254 et seq. of the Code of Virginia) and the Groundwater Withdrawal Regulations (Regulations) (9VAC25-610), the Department of Environmental Quality hereby authorizes the Permittee to withdraw and use groundwater in accordance with this permit.

Permittee Life Essentials, Inc.

Facility Scotswood Subdivision

Facility Address Calvin Drive Lot 1, Section 2, Scotswood Subdivision

Southampton County, Virginia

The Permittee's authorized groundwater withdrawal shall not exceed:

12,000,000 gallons per year,
1,500,000 gallons per month,

The permitted withdrawal will be used to provide a residential and commercial public water supply. Other uses are not authorized by this permit.

The Permittee shall comply with all conditions and requirements of the permit.

By direction of the Department of Environmental Quality, this Permit is granted by:

Signed _____

Scott Morris, DBA, P.E.
Director, Water Division

Date _____

This permit is based on the Permittee's application submitted on March 7, 2022, and subsequently amended to include supplemental information provided by the Permittee. The following are conditions that govern the system set-up and operation, monitoring, reporting, and recordkeeping pertinent to the Regulations.

Part I Operating Conditions

A. Authorized Withdrawal

1. The withdrawal of groundwater shall be limited to the following wells identified in the table below. Withdrawals from wells not included in Table 1 are not authorized by this permit and are therefore prohibited. 9VAC25-610-140 A

Table 1

Owner Well Name	DEQ Well #	Well Depth (ft bls)	Screen Intervals	Aquifer	Latitude	Longitude	Datum
Scottswood #3	187-00205	380	370 – 380	Potomac	36° 42' 22.3"	-76° 58' 55.2"	NAD27
Scottswood #4	187-00206	380	370 – 380	Potomac	36° 42' 22.3"	-76° 58' 55.7"	NAD27

2. Any actions that result in a change to the status, construction, or pump intake setting of wells included in this permit must be pre-approved by the Department of Environmental Quality (Department or DEQ) in writing prior to implementing the change and a revised GW-2 Form must be submitted to the Department within 30 days after the physical construction of a well is altered or the pump intake setting has been changed. If changes are a result of an emergency, notify the Department within 5 days from the change. 9VAC25-610-140 C

B. Public Water Supplies

1. Daily withdrawal limits set forth in this permit are consistent with the requirements and conditions of the Virginia Department of Health (VDH) Waterworks Operation Permit No. 3175650T. 9VAC25-610-140 A 5
2. The Permittee shall submit copies of an updated Waterworks Operation Permit and the associated Engineering Description Sheets to the Department within 30 days of receipt from the Virginia Department of Health. 9VAC25-610-140 C

C. Pump Intake Settings

1. The Permittee shall not place a pump or water intake device lower than the top of the uppermost confined aquifer that a well utilizes as a groundwater source or lower than the bottom of an unconfined aquifer that a well utilizes as a groundwater source in order to prevent dewatering of the aquifer, loss of inelastic storage, or damage to the aquifer from compaction. 9VAC25-610-140 A 6
2. Pump settings in individual wells are limited as follows. Any change in the pump setting must

receive prior approval by the Department.

Owner Well Name	DEQ Well #	Max Pump Setting (feet below land surface)
Scottswood #3	187-00205	*
Scottswood #4	187-00206	*

*Pump intake setting limits will be determined based on the results of the geophysical borehole required in Part II.A of the Permit Special Conditions.

D. Reporting

1. Water withdrawn from each well shall be recorded monthly at the end of each month and reported to the Department, in paper or electronic format, on a form provided by the Department by the tenth (10th) day of each January, April, July and October for the respective previous calendar quarter. Records of water use shall be maintained by the Permittee in accordance with Part III.F, 1 through 5 of this permit. 9VAC25-610-140 A 9
2. The Permittee shall report any amount in excess of the permitted withdrawal limit by the fifth (5th) day of the month following the month when such a withdrawal occurred. Failure to report may result in compliance or enforcement activities. 9VAC25-610-140 C
3. The following is a summary of reporting requirements for specific facility wells:

Owner Well Name	DEQ Well #	Reporting Requirements
Scottswood #3	187-00205	Water Use
Scottswood #4	187-00206	Water Use

E. Water Conservation and Management Plan

1. The Water Conservation and Management Plan (WCMP) submitted in the application received March 7, 2022 and subsequently amended and then approved by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such.
2. By the end of the first year of the permit cycle [date] the Permittee shall submit documentation to the Department that the leak detection and repair program defined in the WCMP has been initiated. This documentation shall include activities completed during the first year of the permit term. 9VAC25-610-100 B
3. As soon as completed but not later than the end of the second year of the permit cycle [date] the Permittee shall submit to the Department results of an audit of the total amount of groundwater used in the distribution system and operational processes. This documentation shall include any resulting changes to the leak detection and repair program in the WCMP. 9VAC25-610-100 B
4. A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five [date] and ten [date] of the permit term. These reports shall include as appropriate: 9VAC25-610-140 C

- a. Any new water saving equipment installed or water saving processes adopted;
 - b. WCMP actions taken to reduce the volume of water needed to supply the system;
 - c. Planned short or long term efforts and actions to be added to the WCMP to improve the efficiency of water use in the system or by customers and for reducing the loss of water;
 - d. Results of additional water audits completed;
 - e. Review of water use category (residential, commercial, industrial) per-connection use in municipal systems;
 - f. Evaluation of the leak detection and repair program;
 - g. Description of educational activities completed; and
 - h. Identification of any water reuse opportunities identified.
5. If revisions or additions to the plan are necessary, an updated WCMP shall be submitted to the Department for approval along with the report prior to implementation of the revised plan.
 6. Records of activities conducted pursuant to the WCMP are to be submitted to the Department upon request.

F. Mitigation Plan

The Mitigation Plan approved on January 10, 2023 by the Department is incorporated by reference into this permit and shall have the same effect as any condition contained in this permit and may be enforced as such. 9VAC25-610-110 D 3 g

G. Well Tags

1. Each well that is included in this permit shall have affixed to the well casing, in a prominent place, a permanent well identification plate that records, at a minimum, the Department well identification number, the groundwater withdrawal permit number, the total depth of the well, and the screened intervals in the well. Such well identification plates shall be in a format specified by the Department and are available from the Department. 9VAC25-610-140 A 12
2. Well tags shall be affixed to the appropriate well casing within 30 days of receiving the tags from the Department. The accompanying well tag installation certification form shall be returned to the Department within 60 days of receipt of the tags. 9VAC25-610-140 C

Part II Special Conditions

Pursuant to 9VAC25-610-140 B and C, the following Special Conditions apply to this permit in order to protect the public welfare, safety, and health or conserve, protect and help ensure the beneficial use of groundwater.

A. Geophysical Log Data Collection

Within 5 years of permit issuance, a complete suite of geophysical logs (Spontaneous Potential, Single Point Resistance, 16/64 Short and Long Normal, Natural Gamma at a scale of 20 ft per inch) shall be obtained from at least 1 borehole at the locations and depths approved by the Department during the coordination process. Given the unknown hydrogeology at the site and the known potential for significant horizontal variability, additional geophysical logs may be required as determined by the Department during the drilling work to assess the well field area. An electronic and hard copy of the geophysical logs shall be submitted to the Department within 30 days of collection to allow determination of the top and bottom of the aquifer in use. 9VAC25-610-140 C

At least three months prior to the scheduled geophysical logging, the Permittee shall notify the Department of the drilling timetable to receive any further guidance needed on performing the geophysical logging and to allow scheduling of Department staff to make a site visit during the drilling of the borehole and/or the geophysical logging. Geophysical log data collected without the oversight of the Department will not be accepted.

B. Pump Intake Determination and Reset

Within 90 days of notification of the maximum pump setting depth as determined by Department staff based on new geophysical log data obtained by the Permittee as required by the permit, the Permittee shall submit documentation from a certified well provider, or other source as accepted by the Department, that the pump intake for each production well is set above the setting stated in the notification.

Part III General Conditions

A. Duty to Comply

The Permittee shall comply with all conditions of the permit. Nothing in this permit shall be construed to relieve the permit holder of the duty to comply with all applicable federal and state statutes, regulations and prohibitions. Any permit violation is a violation of the law and is grounds for enforcement action, permit termination, revocation, modification, or denial of a permit application. 9VAC25-610-130 A

B. Duty to Cease or Confine Activity

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to

halt or reduce the activity for which a permit has been granted in order to maintain compliance with the conditions of the permit. 9VAC25-610-130 B

C. Duty to Mitigate

The Permittee shall take all reasonable steps to avoid all adverse impacts that may result from this withdrawal as defined in 9VAC25-610-10 and provide mitigation of the adverse impact when necessary as described in 9VAC25-610-110 D 3 g and 9VAC25-610-130 C.

D. Inspection, Entry, and Information Requests

Upon presentation of credentials, the Permittee shall allow the Department, or any duly authorized agent of the Department, at reasonable times and under reasonable circumstances, to enter upon the Permittee's property, public or private, and have access to, inspect and copy any records that must be kept as part of the permit conditions, and to inspect any facilities, well(s), water supply system, operations, or practices (including sampling, monitoring and withdrawal) regulated or required under the permit. For the purpose of this section, the time for inspection shall be deemed reasonable during regular business hours. Nothing contained herein shall make an inspection time unreasonable during an emergency. 9VAC25-610-130 D

E. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any information that the Department may request to determine whether cause exists for modifying or revoking, reissuing, or terminating the permit, or to determine compliance with the permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by regulation or this permit. 9VAC25-610-130 E

F. Monitoring and Records Requirements

1. The Permittee shall maintain a copy of the permit on-site and/or shall make the permit available upon request. 9VAC25-610-130 E
2. Monitoring of parameters shall be conducted according to approved analytical methods as specified in the permit. 9VAC25-610-130 F 1
3. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. 9VAC25-610-130 F 2
4. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three years from the date of the expiration of a granted permit. This period may be extended by request of the Department at any time. 9VAC25-610-130 F 3
5. Records of monitoring information shall include as appropriate: 9VAC25-610-130 F 4

- a. the date, exact place and time of sampling or measurements;
- b. the name(s) of the individual(s) who performed the sampling or measurements;
- c. the date the analyses were performed;
- d. the name(s) of the individual(s) who performed the analyses;
- e. the analytical techniques or methods supporting the information, such as observations, readings, calculations and bench data used;
- f. the results of such analyses; and
- g. chain of custody documentation.

G. Environmental Laboratory Certification

The Permittee shall comply with the requirement for certification of laboratories conducting any tests, analyses, measurements, or monitoring required pursuant to the State Water Control Law (§ 62.1-44.2 et seq. of the Code of Virginia), Environmental Laboratory Certification Program (§ 2.2-1105 et seq. of the Code of Virginia), Certification for Noncommercial Environmental Laboratories (1VAC30-45), and/or Accreditation for Commercial Environmental Laboratories (1VAC30-46), and

1. Ensure that all samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
2. Conduct monitoring according to procedures approved under 40CFR Part 136 or alternative methods approved by the U.S. Environmental Protection Agency.
3. Periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals that will ensure accuracy of measurements. 1VAC30-45-20

H. Future Permitting Actions

1. A permit may be modified or revoked as set forth in Part VI of the Groundwater Withdrawal Regulations. 9VAC25-610-290 and 9VAC25-610-130 G
2. If a Permittee files a request for permit modification or revocation, or files a notification of planned changes, or anticipated noncompliance, the permit terms and conditions shall remain effective until the Department makes a final case decision. This provision shall not be used to extend the expiration date of the effective permit. 9VAC25-610-130 G
3. Permits may be modified or revoked upon the request of the Permittee, or upon Department initiative, to reflect the requirements of any changes in the statutes or regulations. 9VAC25-610-130 G
4. The Permittee shall schedule a meeting with the Department prior to submitting a new, expanded or modified permit application. 9VAC25-610-85

5. A new permit application shall be submitted 270 days prior to the expiration date of this permit, unless permission for a later date has been granted by the Department, to continue a withdrawal greater than or equal to 300,000 gallons in any month while an application for a renewal is being processed. 9VAC25-610-96
6. A new permit application shall be submitted 270 days prior to any proposed modification to this permit that will (i) result in an increase of withdrawal above permitted limits; or (ii) violate the terms and conditions of this permit. 9VAC25-610-96
7. The applicant shall provide all information described in 9VAC25-610-94 for any reapplication. 9VAC25-610-96 C
8. The Permittee must notify the Department in writing of any changes to owner and facility contact information within 30 days of the change. 9VAC25-610-140 C

I. Metering and Equipment Requirements

1. Each well and/or impoundment or impoundment system shall have an in-line totalizing flow meter to read gallons, cubic feet, or cubic meters installed prior to beginning the permitted use. Meters shall produce volume determinations within plus or minus 10% of actual flows. An alternative method for determining flow may be approved by the Department on a case-by-case basis. 9VAC25-610-140 A 7 b
 - a. A defective meter or other device must be repaired or replaced within 30 days.
 - b. A defective meter is not grounds for not reporting withdrawals. During any period when a meter is defective, generally accepted engineering methods shall be used to estimate withdrawals. The period during which the meter was defective must be clearly identified in the groundwater withdrawal report required by Part I, Subsection D of this permit.
2. Each well shall be equipped in a manner such that water levels can be measured during pumping and non-pumping periods without dismantling any equipment. Any opening for tape measurement of water levels shall have an inside diameter of at least 0.5 inches and be sealed by a removable plug or cap. The Permittee shall provide a tap for taking raw water samples from each permitted well. 9VAC25-610-140 A 7 e

J. Minor Modifications

1. A minor modification to this permit must be made to replace an existing well(s) or add an additional well(s) provided that the well(s) is screened in the same aquifer(s) as the existing well(s), and is in the near vicinity of the existing well(s), the total groundwater withdrawal does not increase, the area of impact does not increase, and the well has been approved by the Department prior to construction. 9VAC25-610-330 B 4 and B 5
2. A minor modification to this permit must be made to combine withdrawals governed by multiple permits when the systems are physically connected as long as interconnection will not result in additional groundwater withdrawal and the area of impact will not increase. 9VAC25-610-330 B 6

3. Minor modifications to this permit must also be made to:
 - a. Change an interim compliance date up to 120 days from the original compliance date, as long as the change does not interfere with the final compliance date. 9VAC25-610-330 B 7
 - b. Allow for change in ownership when the Department determines no other change in the permit is necessary and the appropriate written agreements are provided in accordance with the transferability of permits and special exceptions. 9VAC25-610-320 and 9VAC25-610-330 B 8
 - c. Revise a Water Conservation and Management Plan to update conservation measures being implemented by the Permittee that increase the amount of groundwater conserved. 9VAC25-610-330 B 9

K. Well Construction

At least two weeks prior to the scheduled construction of any well(s), the Permittee shall notify the Department of the construction timetable and receive prior approval of the well(s) location(s) and acquire the Department Well number (DEQ Well #). All wells shall be constructed in accordance with the following requirements.

1. A well site approval letter or well construction permit must be obtained from the Virginia Department of Health prior to construction of the well. 9VAC25-610-130 A
2. A complete suite of geophysical logs (16"/64" Normal, Single Point, Self-Potential, Lateral, and Natural Gamma) shall be completed for the well and submitted to the Department along with the corresponding completion report. 9VAC25-610-140 C
3. The Permittee shall evaluate the geophysical log and driller's log information to estimate the top of the target aquifer and; therefore, a depth below which the pump shall not be set. The Permittee's determination of the top of the target aquifer shall be submitted to the Department for review and approval, or approved on site by the Department's Groundwater Characterization staff, prior to installation of any pump. 9VAC25-610-140 A 6
4. The Permittee shall install gravel packs and grout in a manner that prevents leakage between aquifers. Gravel pack shall be terminated close to the top of the well screen(s) and shall not extend above the top of the target aquifer. 9VAC25-610-140 C
5. A completed GW-2 Form and any additional water well construction documents shall be submitted to the Department within 30 days of the completion of any well and prior to the initiation of any withdrawal from the well. The assigned Department Well number shall be included on all well documents. 9VAC25-610-140 C
6. In addition to the above requirements, if required by the permit, construction of a Water Level Monitoring State Observation Well (SOW) requires:
 - a. The Permittee shall coordinate activities with the Department's Groundwater

Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C

- b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C
 - c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the installation of the transducer and final hook-up of the equipment. 9VAC25-610-140 C
7. In addition to the above requirements, if required by the permit, construction of a Chloride Monitoring SOW requires:
- a. The Permittee shall coordinate activities with the Department's Groundwater Characterization Program (GWCP) to determine the appropriate observation well location and construction schedule, along with the needed screen interval(s), and other completion details following review of geophysical logging. 9VAC25-610-140 C
 - b. Prior to preparation of bid documents for construction of the observation well, the Permittee shall notify the Department and shall include any GWCP requirements in the bid documents. At a minimum, the Department will require a pre-bid meeting with interested drilling contractors and a pre-construction meeting with the successful bidder. 9VAC25-610-140 C
 - c. Instrumentation to meet the requirements for real-time data transmission consistent with the State Observation Well Network shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct final hook-up of the equipment. 9VAC25-610-140 C
 - d. Instrumentation to meet the requirements for continuous measurement of specific conductance from multiple levels within the well screen shall be purchased by the Permittee. The Permittee shall submit a purchase order based on the Department's equipment specifications for review and approval prior to purchase of the equipment. The Permittee shall install the real-time equipment infrastructure with Department oversight. The Department will conduct the final hook-up of the equipment. 9VAC25-610-140 C

L. Permit Reopening

This permit may be reopened for the purpose of modifying the conditions of the permit as follows:

1. To meet new regulatory standards duly adopted by the Board. 9VAC25-610-140 A 11

2. When new information becomes available about the permitted withdrawal, or the impact of the withdrawal, which had not been available at permit issuance and would have justified the application of different conditions at the time of issuance. 9VAC25-610-310 B 1
3. When the reported withdrawal is less than 60% of the permitted withdrawal amount for a five year period. 9VAC25-610-310 B 2
4. If monitoring information indicates the potential for adverse impacts to groundwater quality or level due to this withdrawal. 9VAC25-610-140 C

COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY**PERMIT ISSUANCE FACT SHEET**

Groundwater Withdrawal Permit Number: GW0042302

Application Date: March 07, 2022

The Department of Environmental Quality (Department or DEQ) has reviewed the application for a Groundwater Withdrawal Permit. This document provides the pertinent information concerning the legal basis, scientific rationale, and justification for the issuance/reissuance/modification of the Groundwater Withdrawal Permit listed below. Based on the information provided in the application and subsequent revisions, the Department has determined that there is a reasonable assurance that the activity authorized by the permit is a beneficial use as defined by the regulations. Groundwater impacts have been minimized to the maximum extent practicable. The following details the application review process and summarizes relevant information for developing the Permit and applicable conditions.

Permittee / Legal Responsible Party

Name & Address: Life Essentials, Inc.
20081 Isle of Wight Industrial Park Rd
Smithfield, VA 23430
Phone: (757) 356-6517

Facility Name and Address

Name & Address: Scottswood Subdivision
Calvin Drive Lot 1, Section 2, Scottswood Subdivision
Southampton County, VA 23851
Phone: (757) 650-9964

Contact Information:

Name: Robert Weeks
E-mail: bobby@firstcallpaintball.com
Phone: (757) 650-9964

Proposed Beneficial Use:

The groundwater withdrawal will be used for a residential and commercial public water supply.

Staff Findings and Recommendations

Based on review of the permit application, staff provides the following findings.

- The proposed activity is consistent with the provisions of the Ground Water Management Act of 1992, and will protect other beneficial uses.
- The proposed permit addresses minimization of the amount of groundwater needed to provide the intended beneficial use.
- The effect of the impact will not cause or contribute to significant impairment of state waters.
- This permit includes a plan to mitigate adverse impacts on existing groundwater users.
- The permit reflects the required consultation with and full consideration of the written recommendations of the Virginia Department of Health (VDH).

Staff recommends Groundwater Withdrawal Permit Number GW0042302 be issued as proposed.

Approved:

Scott Morris, DBA, P.E.
Director, Water Division

Date:

Processing Dates

Processing Action	Date Occurred/Received
Pre-Application Meeting:	November 4, 2021
Application Received by DEQ:	March 7, 2022
Permit Fee Deposited by Accounting:	March 1, 2022
Application Review Conducted:	January 10, 2023
Request for Additional Information Sent:	February 2, 2023
Response to Request for Additional Information Received:	February 21, 2023
Local Government Ordinance Form Received by DEQ:	March 7, 2022
Application Complete:	January 10, 2023
Submit Request for Technical Evaluation:	April 3, 2023
Technical Evaluation Received by DEQ:	April 4, 2023
Draft Permit Package Sent:	April 12, 2023
Public Notice Published:	
End of 30-Day Public Comment Period:	
Response to Public comment:	
Public Meeting or Hearing:	

Application

Application Information

Description:

Background / Purpose of Facility:

The existing non-municipal public water system supplies water for 155 homes located in the Scottswood Subdivision and the Cypress Cove Country Club in Southampton County, Virginia. The majority of groundwater withdrawal is used for traditional residential consumption including domestic and human consumptive uses. A small percentage of withdrawal is used by the Cypress Cove Country Club for dining services and to fill their swimming pool once a year. The well pump house, tanks, and wells are located on Calvin Drive. Groundwater is withdrawn from two production wells designated as Scottswood #3 (DEQ Well #187-00205), and Scottswood #4 (DEQ Well #187-00206) which are all screened in the Potomac aquifer.

The Scottswood Subdivision was first permitted March 1, 2000 to withdraw 20,000,000 gallons per year (gal/yr) and 2,200,000 gallons per month (gal/mo) under Groundwater Withdrawal Permit No. GW0042300. This permit expired on February 28, 2010 and was reissued on December 1, 2012 under permit No. GW0042301 which authorized withdrawals of 15,000,000 gal/yr and 2,000,000 gal/mo. This permit expired on November 30, 2022 and was administratively continued pursuant to 9VAC25-610-96.

Location of Facility/Withdrawal:

Water Supply Planning Unit: Hampton Roads PDC

County: Southampton County

GWMA/Aquifer: Eastern Virginia GWMA/Potomac Aquifer

Conjunctive Use Source: No conjunctive use.

Withdrawal Use, Current Need, and Projected Demand:

Basis of Need:

The Scottswood Subdivision public water supply provides water for 155 homes located in the Scottswood Subdivision and the Cypress Cove Country Club. On average 95% of the total amount of groundwater withdrawal is used for traditional residential consumption and the other 5% is used by the Cypress Cove Country Club for dining services. In addition, the Cypress Cove Country Club will fill their swimming pool once a year.

Water Demand and Projections:

The Scottswood Subdivision was originally designed as a three-phase development and all three phases have been completed. With the exception of six or less buildable lots located within the community that could be visibly identified as a possible building lot, there are no planned increases in demand for this public water system.

Future projections for demand are solely based on past annual withdrawals for 2000 – 2009 and 2012 – 2021. The annual withdrawals for 2010 and 2011 weren't included since they were unable to be located in the previous owner's records. Monthly withdrawals for October 2021 – September 2022 were also provided. Yearly consumption has decreased by almost 5 million gal/yr in 2021 as compared to the 2000 annual withdrawal.

With no increase in water demand over the previous permit period, the permittee requested to continue the previously permitted withdrawal limits of 15,000,000 gal/yr and 2,000,000 gal/mo with consideration to even lower the permitted amount of withdrawal.

Withdrawal Volumes Requested:

The applicant requested the following withdrawal volumes based upon the projected groundwater demand.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Monthly:	2,000,000	64,516
Maximum Annual:	15,000,000	41,096

Department Evaluation

Historic Withdrawals:

The Department evaluated reported use data from the previous permit term (December 1, 2012 – November 30, 2022). Using the reported monthly use data from the previous permit term, the Department calculated the consecutive 12-month usage. The data shows that the consecutive 12-month usage peaked in 2020 during the pandemic where the highest consecutive 12-month usage was 10,231,901 gal. Following 2020, there was a decrease in the consecutive 12-month usage from 2021 – 2022 where the highest consecutive 12-month usage was 9,874,901 gal. in 2021 and 8,289,513 gal. in 2022. The highest monthly usage occurred in July 2022 at 1,114,404 gal/mo.

Analysis of Alternative Water Supplies:

Based on the number of costumers the cost for water reuse is inefficient and cost prohibitive. Surface water use is an option, but the cost and ability to withdraw from the Cypress Cove Pond, the closest alternative surface water source, is unknown. Purchasing water from the City of Franklin is the most viable option for alternative use. The closest tap location to adjoin the City of Franklin's network is less than one mile away. The cost and feasibility of purchasing water from the City of Franklin has not been determined.

Public Water Supply:

The Scottswood Subdivision system operates under the Virginia Department of Health (VDH) Temporary Waterworks Operation Permit No. 3175650T effective January 24, 2023 and expires December 31, 2023. The waterworks is permitted for a capacity of 53,334 gallons per day.

Water Supply Plan Review:

Scottswood Subdivision, located in Southampton County, is included in the Hampton Roads Regional Water Supply Plan (2011). Water Supply Plan demand projections for the facility were not included in the Plan and could not be considered in the evaluation of the permit request. The Water Supply Plan states that existing sources for the Western Tidewater Sub-Region (containing Southampton County) were projected to meet demands through 2050.

Department Recommended Withdrawal Limits:

Using the reported monthly use data from the previous permit term, the Department calculated the consecutive 12-month usage. The highest consecutive 12-month usage was 10,231,901 gal. In order to account for any variability in usage, system leaks, and acceptable variability in meter accuracy, a 15% factor of safety was added to the highest consecutive 12-month usage of 10,231,901 gal. resulting in the recommended annual withdrawal limit of 12,000,000 gal/yr. The highest monthly withdrawal of 1,114,404 gal/mo was used as the basis for the recommended monthly withdrawal limit. In order to account for any variability in usage, system leaks, and acceptable variability in meter accuracy, a 26% factor of safety was added to the highest monthly withdrawal of 1,114,404 gal/mo resulting in the recommended monthly withdrawal limit of 1,500,000 gal/mo. The applicant has agreed to the Department recommended annual and monthly withdrawal limits. The Department recommended annual and monthly withdrawals are expected to meet the needs of the system over the next permit term and should accommodate unexpected spikes in use.

The requested annual limit represents a 3,000,000 gallon reduction from the previously permitted amount of 15,000,000 gal/yr. The requested monthly limit represents a 500,000 gallon reduction from the previously permitted amount of 2,000,000 gal/mo. Steady overall decline in the monthly and annual

usage amounts indicate the Department recommended withdrawal limits should meet the facility's needs. The water usage at this facility is for human consumption.

The Department recommends the following withdrawal volumes based upon evaluation of the groundwater withdrawal permit application.

Period of Withdrawal	Total Volume (gal.)	Volume in gal/day
Maximum Monthly:	1,500,000	48,387
Maximum Annual:	12,000,000	32,877

Technical Evaluation:

Aquaveo, LLC performed a technical evaluation of the application for the Department based on the VAHydro Groundwater Eastern Virginia Model (VAHydro-GW-VCPM). The objectives of this evaluation were to determine the areas of any aquifers that will experience at least one foot of water level decline due to the proposed withdrawal (the Area of Impact or AOI), to determine the potential for the proposed withdrawal to cause salt-water intrusion, and to determine if the proposed withdrawal meets the 80% drawdown criteria. Aquaveo, LLC also evaluated water levels in the Eastern Virginia Model compared to measured field values.

The Department initially concluded that the Department recommended withdrawals do not satisfy the technical evaluation criteria for permit issuance. A summary of the results of the evaluation and the AOI for the Potomac aquifer is provided in the Technical Evaluation (Attachment 1). However, the existing operating facility is geographically located where the combined drawdown of all existing lawful withdrawals has already exceeded the 80% drawdown criteria. Any existing permitted facility located in this geographic location would be unable to comply with the technical criteria of 9VAC25-610-110 D 3 h. Although the technical evaluation did not comply with the 80% drawdown criteria the evaluation did not predict any changes to the regional flow patterns that would lead to reduced water quality. The withdrawal evaluation resulted in an AOI in the Potomac aquifer that extends approximately 1 mile from the pumping center in the Scottswood Subdivision. The AOI encompasses the Scottswood Subdivision, the Cypress Cove Country Club, and other adjacent properties. A Mitigation Plan, to address any potential claims from existing well owners, with the AOI is included in the permit (Attachment 3).

Groundwater Withdrawal Regulation 9VAC25-610-110 E provides that when available supplies of groundwater are not sufficient to support all those who desire to use them, human consumptive use shall be given the highest priority. In addition, 9VAC25-610-110 F 2 provides that the Department shall reissue a permit to any public water supply user for an annual amount no less than the amount equal to that portion of the permitted withdrawal that was used by said system to support human consumption during 12 consecutive months of the previous term of the permit.

The Department has concluded that, although the proposed withdrawal does not satisfy the technical criteria of 9VAC25-610-110 D 3 h, the permit may be issued given the reduction in the requested withdrawal and the fact that the water will be utilized for human consumptive use.

Part I Operating Conditions

Authorized Withdrawals:

Owner Well Name	DEQ Well #	Aquifer	Type	Pump Intake Limit (ft. bls)
Scottswood #3	187-00205	Potomac	Production	*
Scottswood #4	187-00206	Potomac	Production	*

*Pump intake limits will be determined based on the results of the geophysical borehole as required in Part II.A of the Permit Special Conditions.

Apportionment:

The facility utilizes two production wells. Scottswood #3 (DEQ Well #187-00205) and Scottswood #4 (DEQ Well #187-00206) work together in conjunction with an alternator that allows the pumps to cycle back and forth between the two wells. The goal is to share the burden of work between the wells and to withdraw approximately the same amounts of water per well over the course of the year. Therefore, an apportionment limit is not required in the permit.

Additional Wells

Observation Wells: No observation wells.

Abandoned Wells:

Owner Well Name	DEQ Well #	Aquifer
Scottswood #1	187-00207	UNKNOWN
Scottswood #2	187-00204	Potomac

Out of Service Wells: No out of service wells.

Pump Intake Settings:

The pump intake is set at 294 ft. bls for Scottswood #3 (DEQ Well #187-00205) and 273 ft. bls for Scottswood #4 (DEQ Well #187-00206). The pump intake settings will be determined by the results of the geophysical borehole required in Part II Special Conditions. The current settings for both wells may need to be raised depending on the results of the geophysical borehole required in Part II Special Conditions.

Withdrawal Reporting:

Groundwater withdrawals are to be recorded monthly and reported quarterly.

Water Conservation and Management Plan:

A Water Conservation and Management Plan (WCMP) meeting the requirements of 9VAC25-610-100 B was submitted and reviewed as part of the application process. The accepted Plan is to be followed by the permittee as an operational Plan for the facility/water system, is incorporated by reference into this permit, and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 2). In addition, the Permit includes conditions requiring the following:

- Documentation that the leak detection and repair program defined in the WCMP has been initiated is due by the end of the first year of the permit term.
- A result of an audit of the total amount of groundwater used in the distribution system and operational processes is due by the end of the second year of the permit term.
- A report on the plan's effectiveness in reducing water use, including revisions to those elements of the WCMP that can be improved and addition of other elements found to be effective based on operations to date shall be submitted by the end of years five [date] and ten [date] of the permit term.

Mitigation Plan:

The predicted AOI resulting from the Technical Evaluation extends beyond the property boundaries in the Potomac aquifer. Given this prediction, a Mitigation Plan to address potential claims from existing well owners within the predicted area of impact is incorporated by reference in the permit and shall have the same effect as any condition contained in this permit and may be enforced as such (Attachment 3).

Well Tags:

Well tags will be transmitted by the Department after issuance of the final permit.

Part II Special Conditions

Geophysical Boreholes:

Within 5 years of permit issuance, a complete suite of geophysical logs (Spontaneous Potential, Single Point Resistance, 16/64 Short and Long Normal, Natural Gamma at a scale of 20 ft per inch) shall be obtained from at least 1 borehole at the locations and depths approved by the Department during the coordination process. Given the unknown hydrogeology at the site and the known potential for significant horizontal variability, additional geophysical logs may be required as determined by the Department during the drilling work to assess the well field area. An electronic and hard copy of the geophysical logs shall be submitted to the Department within 30 days of collection to allow determination of the top and bottom of the aquifer in use. 9VAC25-610-140 C

At least three months prior to the scheduled geophysical logging, the Permittee shall notify the Department of the drilling timetable to receive any further guidance needed on performing the geophysical logging and to allow scheduling of Department staff to make a site visit during the drilling of the borehole and/or the geophysical logging. Geophysical log data collected without the oversight of the Department will not be accepted.

Pump Intake Reset:

Within 90 days of notification of the maximum pump setting depth as determined by Department staff based on new geophysical log data obtained by the Permittee as required by the permit, the Permittee shall submit documentation from a certified well provider, or other source as accepted by the Department, that the pump intake for each production well is set above the setting stated in the notification. The current pump intake is set at 294 ft. bls for Scottswood #3 (DEQ Well #187-00205) and at 273 ft. bls for Scottswood #4 (DEQ Well #187-00206). The current pump intake settings may need to be raised depending on the results of the geophysical borehole required in Part II Special Conditions, A. Geophysical Log Data Collection.

Part III General Conditions

General Conditions are applied to all Groundwater Withdrawal Permits, as stated in the Groundwater Withdrawal Regulations, 9VAC25-610.

Public Comment

The following sections will be completed after close of the public comment period.

Relevant Regulatory Agency Comments:

Summary of VDH Comments and Actions:

The Office of Drinking Water's Southeast Virginia Field Office responded to the Draft Permit review request on April 25, 2023. The review noted that the reported maximum water usage for the past 48 months was within the capacity defined in the Waterworks Operations Permit. It was also noted that the withdrawal requirements (quantities) indicated in the draft Groundwater Withdrawal Permit are not more restrictive than the historical monthly or annual withdrawal for the past 48 months.

Additionally, the review noted for the years 1996 and 1998 the water level data for USGS 55B 66 SOW 145C doesn't show the water depths to the levels observed in the yield and drawdown data VDH has for those years (static of 217 feet below grade). If DEQ sets the top of the Potomac aquifer at 186 feet bls (as suggested by the VAHydroGW-VCPM model), then efforts to maintain a static water level of 130 feet bls would be needed for current pump equipment and specific yields.

Public Involvement during Application Process:

Local and Area wide Planning Requirements:

The Southampton County Administrator certified on February 22, 2022, that the facility's operations are consistent with all ordinances. The Department received this certification on March 7, 2022.

Public Comment/Meetings:

The public notice was published in The Tidewater News on XXX. The public comment period ran from xxxxx to xxxxx

Changes in Permit Part II Due to Public Comments

Changes in Permit Part III Due to Public Comments

Attachments

- 1. Technical Evaluation**
- 2. Water Conservation and Management Plan**
- 3. Mitigation Plan**
- 4. Public Comment Sheet (*if warranted*)**

**COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY**

TECHNICAL EVALUATION FOR PROPOSED GROUNDWATER WITHDRAWAL

Date: April 3, 2023

Application /Permit Number: GW0042302

Owner / Applicant Name: Life Essentials, Inc.

Facility / System Name: Scottswood Subdivision

Facility Type: Public Water Supply – Non-Municipal

Facility / System Location: Southampton County

The Commonwealth of Virginia’s Groundwater Withdrawal Regulations (9VAC25-610) provide that, for a permit to be issued for a new withdrawal, to expand an existing withdrawal, or reapply for a current withdrawal, a technical evaluation shall be conducted. This report documents the results of the technical evaluation conducted to meet the requirements for the issuance of a permit to withdraw groundwater within a Designated Groundwater Management Area (9VAC25-600).

This evaluation determines the:

- (1) The Area of Impact (AOI): The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal.
- (2) Water Quality: The potential for the proposed withdrawal to cause salt water intrusion into any portion of any aquifers or the movement of waters of lower quality into areas where such movement would result in adverse impacts on existing groundwater users or the groundwater resource.
- (3) The Eighty Percent Drawdown (80% Drawdown): The proposed withdrawal in combination with all existing lawful withdrawals will not lower water levels, in any confined aquifer that the withdrawal impacts, below a point that represents 80% of the distance between the land surface and the top of the aquifer at the points where the one-foot drawdown contour is predicted for the proposed withdrawal.

Requested withdrawal amount:

Requested Withdrawal Amount	
Annual Value	12,000,000 (32,877 average gpd)
Monthly Value	1,500,000 (48,387 average gpd)

Requested Apportionment of Withdrawal:

DEQ Well #	Owner Well #	Aquifer	Percent of Withdrawal
187-00205	Scottswood #3	Potomac	50%
187-00206	Scottswood #4	Potomac	50%

Summary of Requested Withdrawal:

The existing non-municipal public water system supplies water for 155 homes located in the Scottswood Subdivision and the Cypress Cove Country Club in Southampton County, Virginia. The majority of groundwater withdrawal is used for traditional residential consumption including domestic and human consumptive uses. A small percentage of withdrawal is used by the Cypress Cove Country Club for dining services and to fill their swimming pool once a year.

The well pump house, tanks, and wells are located on Calvin Drive. Groundwater is withdrawn from two production wells designated as Scottswood #3 (DEQ Well #187-00205) and Scottswood #4 (DEQ #187-00206) which are both screened in the Potomac aquifer. Well #3 (DEQ Well #147-00205) and Well #4 (DEQ Well #147-00206) work together in conjunction with an alternator that allows the pumps to cycle back and forth between the two wells. The goal is to share the burden of work between the wells and to withdraw approximately the same amounts of water per well over the course of the year.

Production Wells:

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Scottswood #3 DEQ Well Number: 187-00205 MPID: 364207076590202	Lat: 36° 42' 22.3" Lon: 76° 58' 55.2" Datum: NAD27 (GPS code real-time differential DGPS) Elevation: 75 feet (Estimated from USGS 7.5' topo map – Franklin)	Completion Date: 05/26/1996 Screens (ft/bls): 370 – 380 Total Depth (ft/bls): 380	294 ft	Potomac
Owner Well Name: Scottswood #4 DEQ Well Number: 187-00206 MPID: 364207076590203	Lat: 36° 42' 22.3" Lon: 76° 58' 55.7" Datum: NAD27 (GPS code real-time differential DGPS) Elevation: 75 feet (Estimated from USGS 7.5' topo map – Franklin)	Completion Date: 02/20/1998 Screens (ft/bls): 370 – 380 Total Depth (ft/bls): 380	273 ft bls	Potomac

Out of Service/Abandoned Well(s):

Identification	Location	Construction	Pump Intake	Source Aquifer
Owner Well Name: Scottswood #1 DEQ Well Number: 187-00207 MPID: UNKNOWN	Lat: 36° 42' 22.1" Lon: 76° 58' 54.7" Datum: NAD27 (GPS code real-time differential DGPS) Elevation: 70 ft (From GW-2 Form)	Completion Date: 08/18/1964 Screens (ft/bls): UNKNOWN Total Depth (ft/bls): 388	189 ft bls	Potomac

Owner Well Name: Scottswood #2	Lat: 36° 42' 22.3" Lon: 76° 58' 54.1" Datum: NAD27 (GPS code real-time differential DGPS)	Completion Date: 01/12/1967	189 ft bls	Potomac
DEQ Well Number: 187- 00204		Abandonment Date: 08/20/2012		
MPID: 364207076590201	Elevation: 75 ft (Estimated from USGS 7.5' topo map – Franklin)	Screens (ft/bls): UNKNOWN		
		Total Depth (ft/bls): 388		

Geologic Setting:

The Scottswood Subdivision wells (applicant wells) are located in Southampton County. The applicant's production wells are screened in the Potomac aquifer. USGS Professional Paper 1731¹, *The Virginia Coastal Plain Hydrogeologic Framework* (VCPHF), is the most recent study discussing the aquifers and confining units of the Virginia Coastal Plain. The study utilized numerous boreholes throughout the Virginia Coastal Plain to interpolate the elevations of the different hydrogeologic units found in the Coastal Plain.

According to the study, the Potomac aquifer is the "largest, deepest, and most heavily used source of ground water in the Virginia Coastal Plain." The aquifer is underlain across its entire extent with basement bedrock. The aquifer is found below the Potomac confining zone. The aquifer is primarily composed "of fluvial-deltaic coarse-grained quartz and feldspar sands and gravels and interbedded clays." The nearest east-west geologic cross section, ID-ID', from the USGS Professional Paper 1731 is shown in the figure at the end of this report.

Hydrologic Framework:

Data from the VCPHF is reported in this technical report to illustrate the hydrogeologic characteristics of the aquifers in the Virginia Coastal Plain near the applicant well and identify major discrepancies between regional hydrogeology and site logs interpreted by DEQ staff. The Virginia Coastal Plain Model² (VCPM) framework was constructed by extracting the hydrogeologic unit tops and thicknesses from the VCPHF. The original USGS VCPM was updated and adapted for use in the VA-DEQ well permitting process and is referred to as VAHydroGW-VCPM.

VAHydroGW-VCPM Model:

The following table lists the locations of the applicant production wells within the VAHydroGW-VCPM Model.

VAHydroGW-VCPM Model Grid				
Well	Well Number	MPID	Row	Column
Scottswood #3	187-00205	364207076590202	118	30
Scottswood #4	187-00206	364207076590203	118	30

¹ McFarland E. R., and Bruce T.S., 2006. The Virginia Coastal Plain Hydrologic Framework: U.S. Geologic Survey Professional Paper 1731. 118 p., 25 pls. (available online at <http://pubs.water.usgs.gov/pp1731/>).

² Heywood, C.E., and Pope, J.P., 2009, Simulation of groundwater flow in the Coastal Plain aquifer system of Virginia: U.S. Geological Survey Scientific Investigations Report 2009–5039, 115 p.

The following aquifer top elevations and thicknesses are simulated in the VAHydroGW-VCPM Model at the model cell containing the applicant wells.

VAHydroGW-VCPM Model Hydrogeologic Unit Information		
Aquifer	Elevation (ft-msl)	Depth (ft-bls)
Surface	32	0
Water Table aquifer (bottom)	7	25
Yorktown-Eastover (top)	7	25
Yorktown-Eastover (bottom)	-15	47
Aquia (top)	-52	84
Aquia (bottom)	-70	102
Potomac (top)	-154	186
Potomac (bottom)	-754	786

Note: ft-msl = feet above mean sea level

Groundwater Characterization Program Recommendations:

The Department requests that the aquifer top identification be determined by the Virginia Coastal Plain Model.

Comparison of the Hydrogeologic Framework and Geologist Report:

The VCPMF identifies the top and thickness of the Potomac aquifer at an elevation of 186 ft-bls and 600 feet thick at the cell containing the applicant wells. The top elevation and thickness of the Potomac aquifer was not provided by DEQ staff so a comparison with the VCPMF could not be made for this evaluation.

Pump Intake Elevation:

Virginia regulations specify that well pump intakes must be placed at or above the top of the source aquifer. The top elevations for the Potomac aquifer for the two production wells were not provided by DEQ staff so an assessment of the compliance with the limits specified by regulation³ could not be made for this evaluation.

Water Level Comparison:

The *Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report (the *2021-2022 report*) and modeling files⁴ provide two sets of simulated potentiometric water surface elevations. These water elevations are based upon, 1) the reported withdrawal amount of wells in the VAHydroGW-VCPM model ("the reported use simulation") and, 2) the total permitted withdrawal amount for wells in the VAHydroGW-VCPM model ("the total permitted simulation"). USGS regional observation network well water levels were compared to the water levels in the 2021-2022 report in order to evaluate the performance of the regional model in the vicinity of the applicant wells and assess historical groundwater trends. In the tables below, simulated water levels from the year 2021, from the reported use simulation, were compared to USGS measured water levels for the same year. For comparison, the total permitted simulated water levels are also reported. The total permitted water levels are taken from the end of the 50

³ 9 VAC 25 610 140.A.5. "The permittee shall not place a pump or water intake device lower than the top of the uppermost confined aquifer that a well utilizes as a ground water source or lower than the bottom of an unconfined aquifer that a well utilizes as a ground water source;

⁴ Refer to "Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use" at

<http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/GroundwaterCharacterization/ReportsPublications.aspx>

year total permitted simulation and represent simulated water levels, 50 years from present, if all GWMA wells were to pump at their total permitted amount.

The USGS regional observation network wells closest to the applicant wells is shown in Figure 1 and listed in the following table. The depth of these wells correspond with the Potomac aquifer. The distances from the applicant wells to the USGS wells are also given in the table. The 2021 annual average water levels observed in the regional observation network wells are given in the following table. The VAHydroGW-VCPM row and column containing the USGS wells are also given. The water levels obtained from the regional observation network wells are shown in Figures 2 and 3. These figures also show the water levels from the reported use VAHydroGW-VCPM simulation for the cells containing the USGS wells.

The water level graph for the first well in the Potomac aquifer (55B 66 SOW 145C) shows a steady decline in water levels from the time of the earliest available records (1984) to about 1996. From 1996 to about 2010 there is a gap in the water level data. From 2010 to 2012, there is a drastic, approximately 80 foot increase in the water levels. Around 2012, the water level decreased almost 20 feet in a year or so, then around 2013 or 2014 the water level stabilized and has remained relatively stable to the present. The VAHydroGW-VCPM simulated reported use water levels at this location are approximately 5-10 feet lower than, but in general agreement with the USGS observed water levels during periods of time where USGS data is available.

The water level graph for the second well in the Potomac aquifer (52A 1) shows a steady decline in water levels from the time of the earliest available records (1970) to about 2010. From 2010 to 2012 the water levels at this well shows a sharp increase of approximately 15 feet. From 2012 to the present the water levels have remained relatively stable. The VAHydroGW-VCPM simulated reported use water levels at this location are approximately 5-10 feet higher than, but in general agreement with the USGS observed water levels.

Potomac Aquifer		
Measurement	Well 55B 66 SOW 145C	Well 52A 1
Distance from nearest applicant well (miles)	3.1	17.7
Elevation (ft-msl)	34	43.4
VAHydroGW-VCPM Row	120	127
VAHydroGW-VCPM Column	33	15
VAHydroGW-VCPM Cell Elevation	26	39
USGS Regional Well 2021 Average Water Level (ft-bls)	128.3	40.6
USGS Regional Well 2021 Average Water Level (ft-msl)	-94.3	2.8
VAHydroGW-VCPM 2021 Reported Use Simulated Water Level (ft-bls)	130	25.8
VAHydroGW-VCPM 2021 Reported Use Simulated Water Level (ft-msl)	-104	13.2
VAHydroGW-VCPM Total Permitted Simulated Water Level (ft-bls)	161.3	36.6
VAHydroGW-VCPM Total Permitted Simulated Water Level (ft-msl)	-135.3	2.4

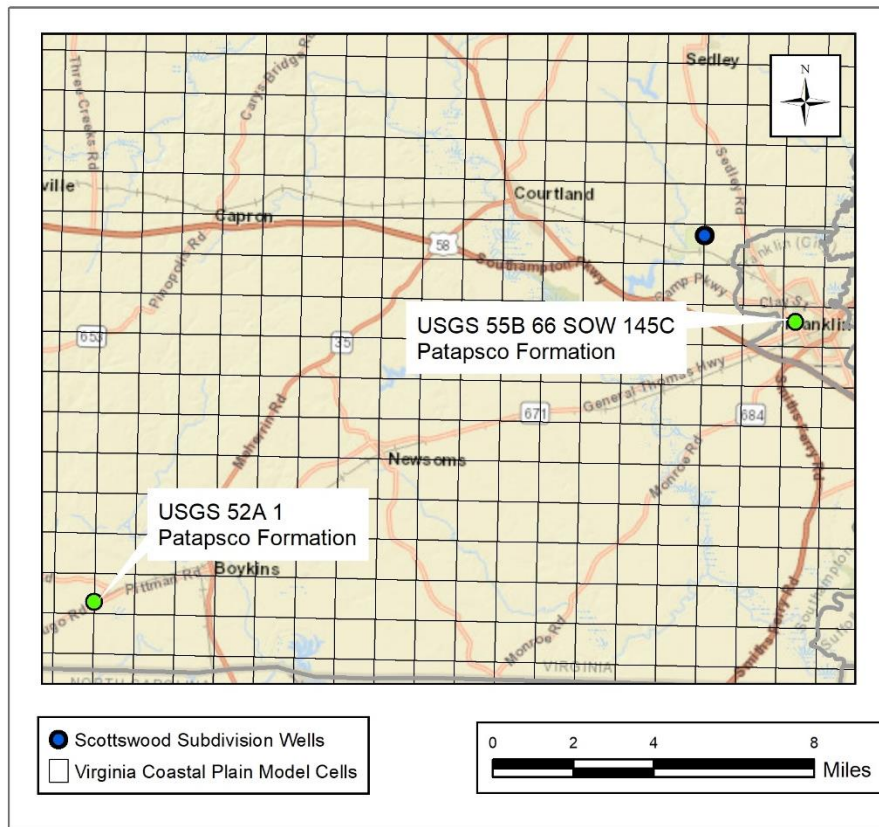


Figure 1. Nearest USGS regional observation network wells.

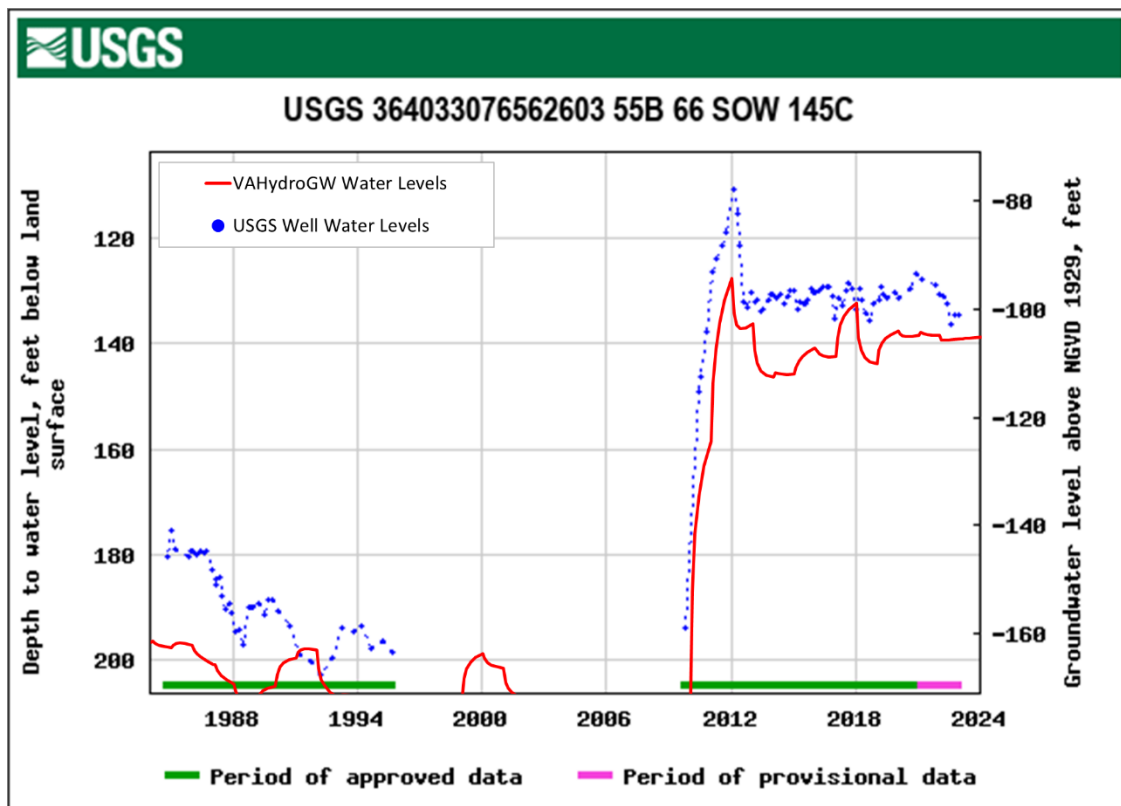


Figure 2. USGS Regional Observation Well 55B 66 SOW 145C, Potomac aquifer water levels (Patapsco Formation) recorded from 1984 to present (well depth 360 ft bls, land surface 34 ft msl) and VAHydroGW-VCPM reported use water levels.

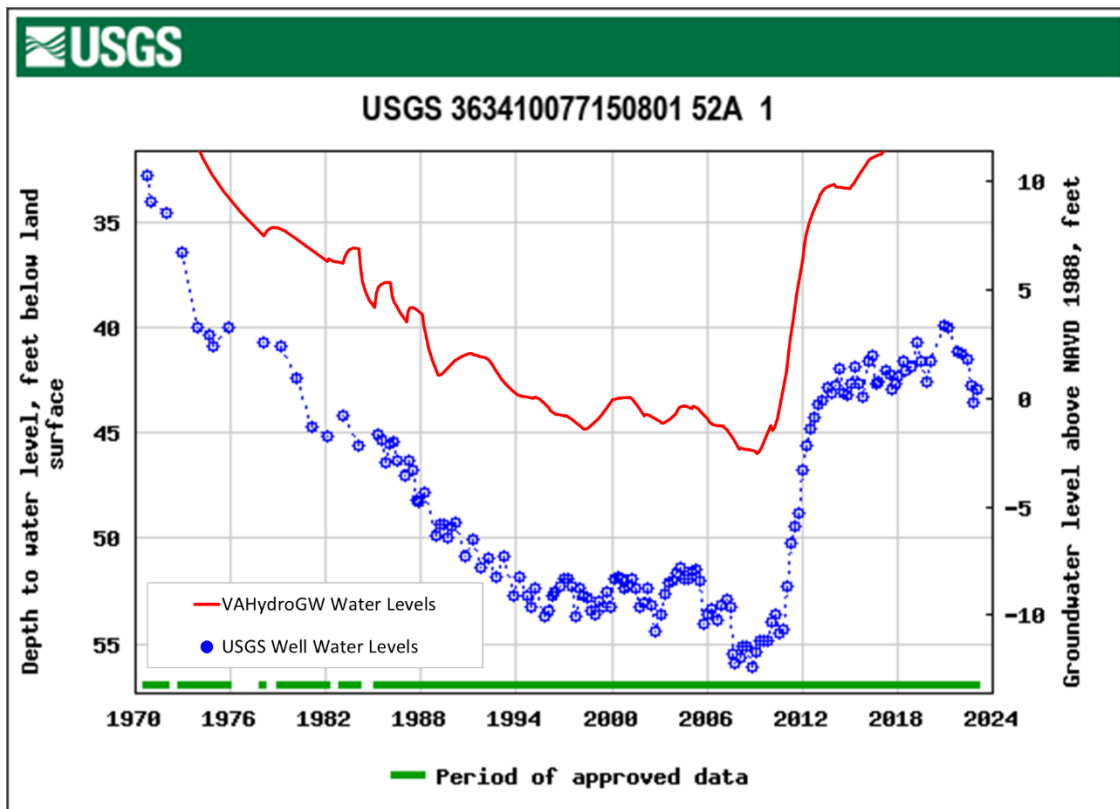


Figure 3. USGS Regional Observation Well 52A 1, Potomac aquifer water levels (Patapsco Formation) recorded from 1970 to present (well depth 217 ft bls, land surface 43.4 ft msl) and VAHydroGW-VCPM reported use water levels.

Aquifer Test(s):

The report for the aquifer test conducted in January 2012 for the Scottswood Subdivision Well #3 (DEQ Well #187-00205) and Well #4 (DEQ Well #187-00206) is available on file with the Department upon request.

The hydraulic properties for the VAHydroGW-VCPM cell containing the applicant wells are shown in the following table.

Hydrogeologic Unit	Horizontal Conductivity (ft/day)	Transmissivity (ft ² /day)	Storage Coefficient	Specific Storage (1/ft)
Surficial (Columbia) aquifer	2	50	-	0.000032
Yorktown-Eastover aquifer	22.4	492.2	0.00071	0.000032
Aquia aquifer	109	1,962	0.00058	0.000032
Potomac aquifer	24.7	14,829.6	0.00112	0.00000186

Model Results

Evaluation of Withdrawal Impacts:

The magnitude of the proposed withdrawal does not allow for assessment of the area of impact using VAHydroGW-VCPM. The aquifer parameters from the aquifer test conducted in 2012 for this facility (see the July 2012 Aquifer Test Report for Scottswood Subdivision prepared by GeoResources, Inc.) were used to perform a two-dimensional analytical simulation to simulate drawdown due to the requested withdrawal for this technical evaluation. The drawdown in the Potomac aquifer resulting from the

proposed withdrawal was calculated using Theis (1935) 2-D analytical simulations. The Theis simulation predicts the drawdown in a confined aquifer assuming constant discharge from a fully penetrating well. The following parameters were used for the 2-D analytical simulation:

Model Input Parameters (source: Aquifer parameters from 2012 Scottswood Subdivision aquifer test Report prepared by GeoResources, Inc.):

Potomac Transmissivity	=	2,920 ft ² /day
Potomac Storage Coefficient	=	9.8 x 10 ⁻⁴

Withdrawal rate/Simulation Time = 50 years at 12,000,000 gallons per year (32,877 gallons per day).

Area of Impact:

The AOI for an aquifer is the areal extent of each aquifer where one foot or more of drawdown is predicted to occur as a result of the proposed withdrawal. The simulated stabilized effects resulting from the VAHydroGW-VCPM baseline and proposed withdrawal simulations listed above predict an area of impact in the Potomac aquifer that extends approximately 1 mile from the pumping center. An AOI map for the Potomac aquifer is included at the end of this report. There are no existing permitted wells within the AOI.

Water Quality:

The regional model (VAHydroGW-VCPM) does not indicate any changes to regional flow patterns that would lead to reduced water quality.

80 % Drawdown:

The 80% criterion was evaluated for the seven confined aquifers in the Virginia Coastal Plain. The proposed withdrawal did not meet the required conditions for permit issuance in the Potomac and Aquia aquifers.

The *Virginia Coastal Plain Model (VAHydroGW-VCPM) 2021-2022 Annual Simulation of Potentiometric Groundwater Surface Elevations of Reported and Total Permitted Use* report documents cells below the 80% drawdown criterion in the Yorktown-Eastover, Piney Point, Aquia, Virginia Beach, and Potomac aquifers for a total permitted withdrawal simulation. The results of the proposed withdrawal simulation described above did not predict any additional cells with lowering of the water level below the 80% drawdown surface. However, the AOI of the Potomac aquifer contains and/or intersects existing critical cells. Therefore, this withdrawal is not within the limits set by the 80% drawdown criterion.

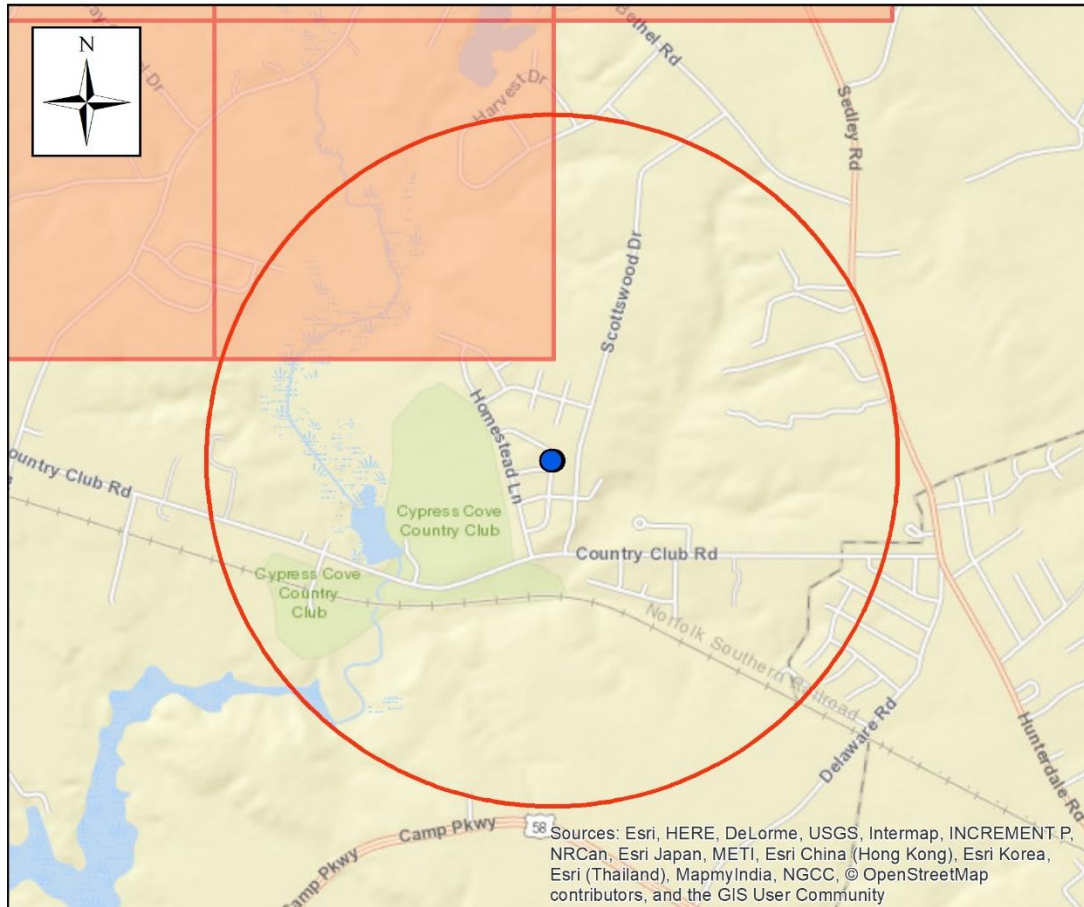
The requested withdrawal is allocated 100% to the Potomac aquifer. The technical evaluation analysis indicated that the apportionment of the requested withdrawal amount among the applicant production wells had no significant effect on the outcome of the technical evaluation.

Conclusion:

The withdrawal requested by Life Essentials, Inc. for the Scottswood Subdivision does not satisfy the technical evaluation criteria for permit issuance.

Scottswood Subdivision

Area of Impact - Potomac Aquifer



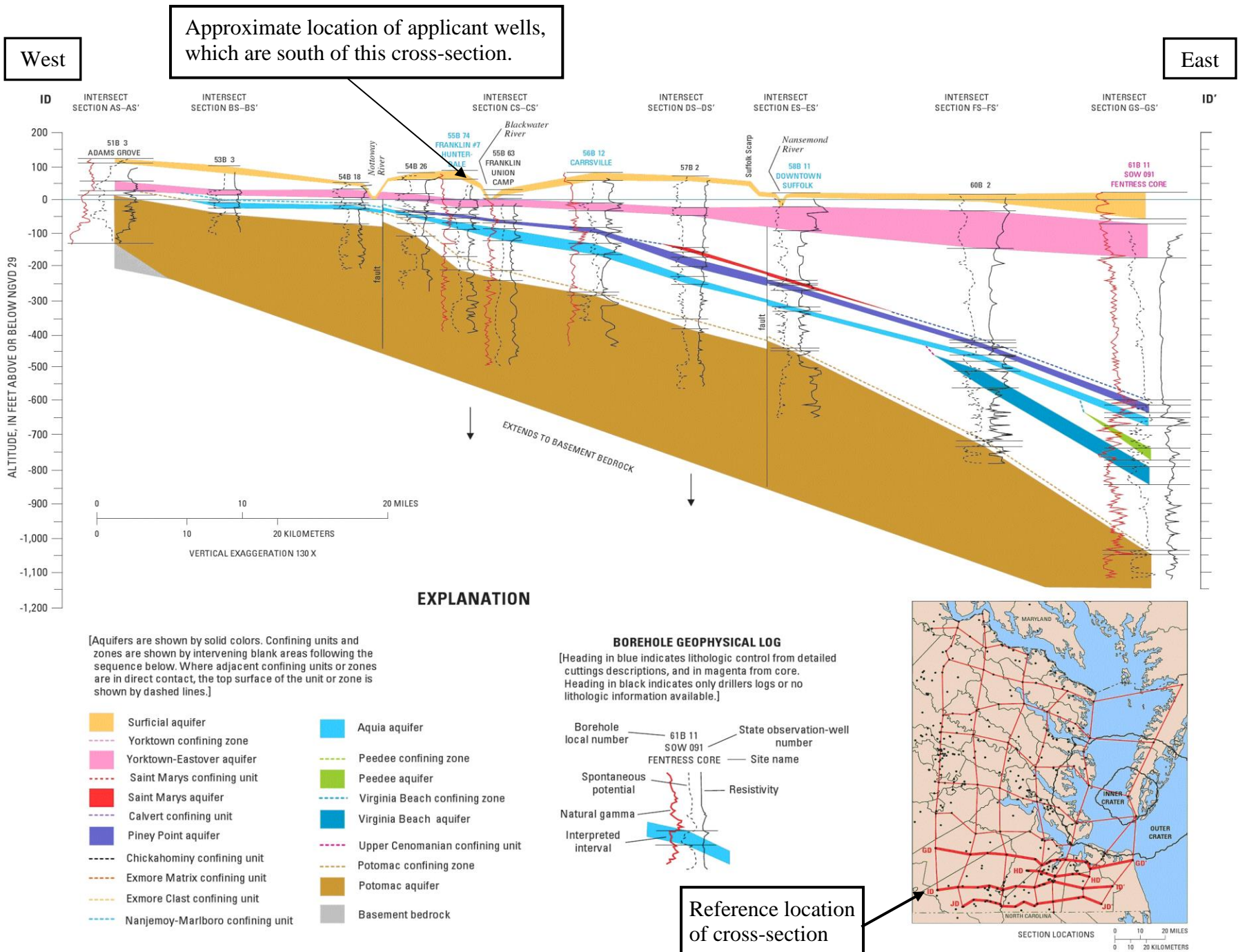
- Scottswood Subdivision Wells
- Potomac AOI
- Potomac Aquifer Critical Cells

Simulated drawdown at or exceeding one foot in the Potomac aquifer resulting from a two-dimensional Theis (1935) simulation of 50 years at 12,000,000 gallons per year from the Potomac aquifer.

Maximum radius of one-foot drawdown (Area of Impact) occurs approximately 1 mile from the pumping center.

Technical Evaluation performed by
Aquaveo, LLC for the Virginia DEQ,
Office of Water Supply Planning
April 4, 2023





Coastal Plain (2006) Cross-Section ID-ID' from USGS Professional Paper 1731.

Attachment H

Water Conservation and Management Plan:

As a water utility company, we are committed to a water loss reduction program and a water use education program. These programs will improve the efficiency of water use and will minimize waste. This is by definition water conservation. Below are some of the methods used to address water conservation

UNIFORM STATEWIDE BUILDING CODE

The State of Virginia is the first line of defense by instituting building codes to address water conservation with new construction. The Building Officials and Code Administrators (BOCA) National Plumbing Code as adopted in the Virginia Statewide Building Code requires the installation of water conservation fixtures in all new construction and in some remodeling of existing structures. The use of ultra or very low flow fixtures is therefore required.

WATER LOSS REDUCTION PROGRAM

A water audit is determined necessary when there is a ten percent or higher loss in water produced.

$$(\text{Total Production meter} - \text{Sum of Usage meters}) < (.9 \times \text{Total Production})$$

At which time when sum of meter usage is 90% or less of total water produced, our Leak Repair Plan is to be implemented. See Attachment H-I.

Leak detection is key to a successful water loss reduction program. We conduct a water balance once every two months when meters are read. This is a simple comparison of the amount of water produced at the well site to the sum total of water used by the customers. The difference would account for any loss.

Since customers are very helpful in reporting leaks, we take advantage of these incoming calls to thank the customer and to encourage their continued participation in our loss reduction program.

Weekly general maintenance in and around the pump house allows our service personnel an opportunity to check for unusually high water flows at the master meter. Also on a bi monthly basis, the entire water distribution system is visually inspected. If the water balance, at the time, indicates a major leak, then we conduct a visual inspection. Water leak detection equipment will be employed as needed. In general, the community is very concerned about water leaks and is normally the first to notice and report a leak.

WATER USE EDUCATION PROGRAM

Our newest information sharing tool is our online website, www.LifeEssentials.com. This is our fastest and most economical way to help with educating our current customer base with water conservation measures.

We help to create an awareness of local supply issues and problems by communicating with our customers during visits to the community and also through office correspondence. Our service crew take time to discuss with the customers during normal maintenance and meter reading visits about water issues and problems.

The community will be notified periodically of water saving information and current water shortages.

Office personnel monitor customer usage from each billing cycle and will notify the customer of any unusually high reading. This acknowledgement and awareness on our part helps to encourage customer participation.

Inform the community of the benefits of water conservation which includes:

- Reporting water leaks to the utility company.
- Identifying water conserving techniques such as low water use fixtures.

WATER SHORTAGE AND DROUGHT

During times of water shortages and droughts, the utility company may choose to decrease the water pressure at the pump station as required by VDH.

The utility company may implement mandatory water use restrictions that prohibit all non-essential uses such as lawn watering, car washing, and/or similarly appropriate non-essential uses for the duration of the water shortage emergency.

RATE STRUCTURE

All of our water connections are metered and the consumer will be billed for the actual usage. This discourages water waste. Life Essentials is currently requesting a rate increase on usage from the State Corporation Commission, there has not been an increase in over 15 years. An increase cost of usage will be a very important key in customers being attentive of their usage and waste of water, as well as a very much needed boost to our companies reserves to start dealing with failing components within the system.

MAINTENANCE PROGRAMS

The utility company is committed to maintaining water meters, water mains, and efficient pumping equipment. We conduct bi-monthly inspections of all pumping equipment, water mains, and water meters to ensure safe and efficient operations. All malfunctions and/or leaks are repaired as soon as practical.

Water Use Education Program

Our best source of education is via our new website, www.LifeEssentialsVa.com. We continually update this site with new information concerning water conservation, water testing results as well as new safety guidelines as issued by VDH.

Our customers are greeted by our staff in two manners. During the meter reading process and over the phone conversations. All staff members are trained to engage with customers during conversations to address water conservation and to help any problems they might have with water usage.

Both owner and staff attend VDH classes on water conservation and management. This has been our best resource to help with staying educated on new information involving water usage.

All water usage information is published via our website. All customers are directed to this site for up to date information on their water supply system, they are notified via U.S. Mail as to any new information that is published.

WATER REUSE

VDH does not allow recycled water for potable use.

All users within the Scottswood development are residential consumers with the exception of the Country Club. Normal practices of water reuse of rainwater, stormwater, gray water and/or wastewater are not applicable for this system. No other uses of water are derived from this system outside of personal consumption.

Leak Repair Plan

Neighborhood: _____ Address: _____

Date: _____ By: _____

	Action Item	Description	Date Assessed	Problems Solutions	Goal Completion Date
	Perimeter Surveillance	Conduct extensive ground surveillance looking for any irregularities in standing water or any unauthorized non measured water usage			
	Billed Consumption	Compare consumptions rates of present reading to prior two readings. Confirm any variances, investigate any meter with abnormal reading			
	Production Meter Accuracy	Conduct testing to assess the accuracy of the production supply meter			
	Meter Reading and Billing Errors	Review previous and current billings to insure no data entry errors. Issue repair tickets for zero read meters.			
	Consumer Meter Accuracy	Meter accuracy testing of a sample population of the customer meters with either a calibrated test bench or by bucket testing			

MITIGATION PLAN

DEQ GROUNDWATER WITHDRAWAL PERMIT NO. GW0042301

OWNER NAME: Life Essentials, Inc

FACILITY NAME: Scottswood Subdivision

LOCATION: Southampton County, Va

INTRODUCTION

On November 1, 2021, Life Essentials, Inc submitted a Groundwater Withdrawal Permit Application to the Virginia Department of Environmental Quality (DEQ) to withdraw groundwater. Groundwater withdrawals associated with this permit will be utilized to supply water consumption needs of residential properties located within the Scottswood Subdivision of Southampton Co.

The purpose of this Mitigation Plan is to provide existing groundwater users a method to resolve claims that may arise due to the impact of the withdrawal from Scottswood Subdivision well field. Predicted drawdown of water levels due to the withdrawal(s) from the Potomac aquifer(s) are shown in the attached maps(s).

Modeled impacts, as shown on the attached maps, extend beyond the boundary of the Scottswood Subdivision facility. Due to these findings, Life Essentials, Inc recognizes that there will be a rebuttable presumption that water level declines that cause adverse impacts to existing groundwater users within the area of impact are due to this withdrawal. Claims may be made by groundwater users outside this area; however, there is a rebuttable presumption that Life Essentials, Inc/Scottswood Subdivision has not caused the adverse impact. Life Essentials, Inc proposes this plan to mitigate impacts to existing users and excludes impacts to wells constructed after the effective date of this permit.

CLAIMANT REQUIREMENTS

To initiate a claim, the claimant must provide written notification of the claim to the following address:

Contact Name Robert P Weeks, Jr
Title President

Permittee Name Life Essentials, Inc
Address PO Box 2128
City, State Zip Code Suffolk, Va 23432

The claim must include the following information: (a) a deed or other available evidence that the claimant is the owner of the well and the well was constructed and operated prior to the effective date of the permit; (b) all available information related to well construction, water levels, historic yield, water quality, and the exact location of the well sufficient to allow Life Essentials, Inc to locate the well on the claimant's property; (c) the reasons the claimant believes that the Scottswood Subdivision withdrawal has caused an adverse impact on the claimants well(s).

CLAIM RESOLUTION

Life Essentials, Inc will review any claim within **five (5) business days**. If Life Essentials, Inc determines that no rebuttal will be made and accepts the claim as valid, Life Essentials, Inc will so notify the claimant and will implement mitigation within **thirty (30) business days**. If the claim is not accepted as valid, Life Essentials, Inc will notify the claimant that (a) the claim is denied **or** (b) that additional documentation from the claimant is required in order to evaluate the claim. Within **fifteen (15) business days** of receiving additional documentation from the claimant, Life Essentials, Inc will notify the claimant (a) that Life Essentials, Inc agrees to mitigate adverse impacts or (b) the claim is denied. If the claim is denied, the claimant will be notified that the claimant may request the claim be evaluated by a three (3) member committee. This committee will consist of one (1) representative selected by Life Essentials, Inc, one (1) representative selected by the claimant, and one (1) representative mutually agreed upon by the claimant and Life Essentials, Inc.

Any claimant requesting that a claim be evaluated by the committee should provide the name and address of their representative to Life Essentials, Inc. Within **five (5) business days** of receipt of such notification, Life Essentials, Inc will notify the claimant and claimant's representative of the identity of Life Essentials, Inc representative and instruct the representatives to select a third representative within **ten (10) business days**. Representatives should be a professional engineer or hydrogeologist with experience in the field of groundwater hydrology. Life Essentials, Inc agrees to reimburse the members of the committee for reasonable time spent, at a rate prevailing in the area for experts in the above listed fields, and for direct costs incurred in administering the plan. The claimant may, at his or her option, choose to provide the reimbursement for the member of the committee selected by the claimant and up to half of the reimbursement for the mutual representative.

Within **ten (10) business days** of selection of the third representative, the committee will establish a **reasonable deadline** for submission of all documentation it needs to evaluate the claim. Both the claimant and Life Essentials, Inc will abide by this deadline.

Within **fifteen (15) business days** of receipt of documentation, the committee will

evaluate the claim and reach a decision by majority vote. The committee will notify the claimant regarding its decision to (a) deny or (b) approve the claim. If the claim is approved, Life Essentials, Inc will mitigate the adverse impacts within **thirty (30) business days** of making the decision or as soon as practical. If the claim is denied by the committee, Life Essentials, Inc may seek reimbursement from the claimant for the claimant's committee representative and one half of the 3rd representative on the committee.

If a claimant within the indicated area of impact indicates that they are out of water, Life Essentials, Inc will accept the responsibility of providing water for human consumptive needs within **seventy-two (72) hours** and to cover the claim review period. Life Essentials, Inc reserves the right to recover the cost of such emergency supply if the claim is denied by Life Essentials, Inc or found to be fraudulent or frivolous. If Life Essentials, Inc denies a claim and the claimant elects to proceed with the three (3) member committee, Life Essentials, Inc will continue the emergency water supply at the claimants request during the committee's deliberations, but reserves the right to recover the total costs of emergency water supply in the case that the committee upholds the denial of the claim. Similarly, Life Essentials, Inc reserves the right to recover costs associated with the claim process if a claim is found to be fraudulent or frivolous.

If it is determined by the committee or shown to the committee's satisfaction that a well operating under a mitigation plan similar to Life Essentials, Inc/Scottswood Subdivision Plan other than those owned and operated by Life Essentials, Inc has contributed to the claimed adverse impact, Life Essentials, Inc's share of the costs associated with mitigation will be allocated in proportion to its share of the impact. Such a determination shall be made by the committee after notification of the third party well owner, giving the third party well owner opportunity to participate in the proceedings of the committee.

PLAN ADMINISTRATION

Nothing in the Plan shall be construed to prevent the Department of Environmental Quality Staff from providing information needed for resolution of claims by the committee.